/M.D./ 12/02/2008

AMENDMENTS TO THE CLAIMS

1. (canceled)

2. (currently amended) The communications network of claim [[1]] 4 where the one or more conditions include traffic volume, an amount of power remaining in a power supply associated with the first node, and an amount of time since the first node has powered down.

3. (canceled)

4. (currently amended) ~~The communications network of claim 3~~ A communications network comprising:

a first node that comprises at least one transceiver and is configured to:

observe one or more conditions in at least one of the communications network or the first node,

select a sleep mode of a plurality of sleep modes based on the observed one or more conditions, each sleep mode of the plurality of sleep modes being associated with a different powering down procedure and a sleep duration;

power down the at least one transceiver for the sleep duration and according to the powering down procedure associated with the selected sleep mode; and

where the plurality of sleep modes includes at least four sleep modes,

where in response to selecting a first sleep mode of the at least four sleep modes, the first node, when powering down, is configured to:

set a sleep timer to a first period of time,

buffer outgoing packets, and

power down the at least one transceiver for the first period of time, and

where in response to selecting a second sleep mode of the at least four sleep modes, the first node, when powering down, is configured to:

transmit a link-level broadcast to at least one neighboring node,

set the sleep timer to a second period of time, the second period of time being longer than the first period of time,

buffer outgoing packets, and

power down the at least one transceiver for the second period of time; and

a plurality of neighboring nodes.

5. (previously presented) The communications network of claim 4 where the link-level broadcast includes information identifying the first node and the second period of time.

6. (previously presented) The communications network of claim 5 where the at least one neighboring node is configured to:

receive the link-level broadcast,

set a timer based on the second period of time, and

buffer packets destined for the first node until the timer expires.

7. (previously presented) The communications network of claim 4 where in response to selecting a third sleep mode of the at least four sleep modes, the first node, when powering down, is configured to:

transmit a point-to-point message to each of the at least one neighboring node, the point-to-point message causing each of the at least one neighboring node to transmit an acknowledgment message,

set the sleep timer to a third period of time in response to receiving the acknowledgement message from each of the at least one neighboring node, the third period of time being longer than the second period of time,

buffer outgoing packets, and

power down the at least one transceiver for the third period of time.

8. (previously presented) The communications network of claim 7 where the point-to-point message includes information identifying the first node and the third period of time.

9. (previously presented) The communications network of claim 8 where the at least one neighboring node is configured to:

receive the point-to-point message,

transmit the acknowledgement message to the first node in response to receiving the point-to-point message,

set a timer based on the third period of time, and

buffer packets destined for the first node until the timer expires.

10. (previously presented) The communications network of claim 7 where in response to selecting a fourth sleep mode of the at least four sleep modes, the first node, when powering down, is configured to:

transmit a routing application message to each of the at least one neighboring node, the routing application message causing each of the at least one neighboring node to transmit a second acknowledgment message,

set the sleep timer to a fourth period of time in response to receiving the second acknowledgement message from each of the at least one neighboring node, the fourth period of time being longer than the third period of time,

buffer outgoing packets, and

power down the at least one transceiver for the fourth period of time.

11. (previously presented) The communications network of claim 10 where the routing application message includes information identifying the first node and the fourth period of time.

12. (previously presented) The communications network of claim 11 where the at least one neighboring node is configured to:

receive the routing application message,

transmit the second acknowledgement message to the first node in response to receiving the routing application message,

transmit a message to one or more neighboring nodes of the at least one neighboring node, the message informing the one or more neighboring nodes that the first node is entering the fourth sleep mode,

set a timer based on the fourth period of time,

remove the first node from one or more routing tables associated with the at least one neighboring node, and

buffer packets destined for the first node until the timer expires.

13. (previously presented) The communications network of claim 12 where the at least one neighboring node is further configured to:

make the first node available in the one or more routing tables after the timer expires.

14. (canceled)

15. (currently amended) The method of claim [[14]] 17 where the one or more conditions include a traffic volume in the communications network, an amount of power remaining in a power supply associated with the node, and an amount of time since the node has powered down.

16. (canceled)

17. (currently amended) ~~The method of claim 16~~ A method for conserving power in a communications network, comprising:

monitoring, via a node in the communications network, one or more conditions in the communications network;

selecting, via the node, a sleep mode of a plurality of sleep modes based on the one or more conditions, each sleep mode of the plurality of sleep modes being associated with a unique powering down procedure and a different sleep duration; and

powering down the node for the sleep duration associated with the selected sleep mode and in accordance with the unique powering down procedure,

where the plurality of sleep modes includes at least four sleep modes,

where in response to the node selecting a first sleep mode of the at least four sleep modes, the powering down includes:

setting a sleep timer to a first period of time,

buffering outgoing packets, and

powering down at least one transceiver associated with the node for the first period of time, and

where in response to the node selecting a second sleep mode of the at least four sleep modes, the powering down the node for the sleep duration includes:

transmitting a link-level broadcast to one or more neighboring nodes,

setting the sleep timer to a second period of time, the second period of time being longer than the first period of time,

buffering outgoing packets, and

powering down the at least one transceiver for the second period of time.

18. (previously presented) The method of claim 17 where the link-level broadcast includes information identifying the node and the second period of time.

19. (previously presented) The method of claim 18 where the method further comprises:

receiving the link-level broadcast at at least one of the one or more neighboring nodes,

setting a timer based on the second period of time at the at least one of the one or more neighboring nodes, and

buffering, at the at least one of the one or more neighboring nodes, packets destined for the node until the timer expires.

20. (previously presented) The method of claim 17 where in response to the node selecting a third sleep mode of the at least four sleep modes, the powering down the node for the sleep duration includes:

transmitting a point-to-point message to each of the one or more neighboring nodes, the point-to-point message causing each of the one or more neighboring nodes to transmit an acknowledgment message,

setting the sleep timer to a third period of time in response to receiving the acknowledgement message from each of the one or more neighboring nodes, the third period of time being longer than the second period of time,

buffering outgoing packets, and

powering down the at least one transceiver for the third period of time.

21. (previously presented) The method of claim 20 where the point-to-point message includes information identifying the first node and the third period of time.

22. (previously presented) The method of claim 21 where the method further comprises:

receiving the point-to-point message at each of the one or more neighboring nodes,

transmitting the acknowledgement message to the node in response to receiving the point-to-point message,

setting a timer based on the third period of time, and

buffering packets destined for the node until the timer expires.

23. (previously presented) The method of claim 20 where in response to selecting a fourth sleep mode of the at least four sleep modes, the powering down the node for the sleep duration includes:

transmitting a routing application message to each of the one or more neighboring nodes, the routing application message causing each of the one or more neighboring nodes to transmit a second acknowledgment message,

setting the sleep timer to a fourth period of time in response to receiving the second acknowledgement message from each of the one or more neighboring nodes, the fourth period of time being longer than the third period of time,

buffering outgoing packets, and

powering down the at least one transceiver for the fourth period of time.

24. (previously presented) The method of claim 23 where the routing application message includes information identifying the node and the fourth period of time.

25. (previously presented) The method of claim 24 where the method further comprises:

receiving the routing application message at each of the one or more neighboring nodes,

transmitting the second acknowledgement message to the node in response to receiving the routing application message,

transmitting another message to at least one other node indicating that the node is entering the fourth sleep mode,

setting a timer based on the fourth period of time,

removing the node from one or more routing tables associated with the neighboring node, and

buffering packets destined for the node until the timer expires.

26. (previously presented) The method of claim 25 where the method further comprises:

making the node available in the one or more routing tables after the timer expires.

27. - 28. (canceled)

29. (currently amended) ~~The computer-readable memory device of claim 28~~ A computer-readable memory device including a plurality of instructions that, when executed by at least one processor, causes the at least one processor to perform a method for conserving power in a

node of a communications network, the node including at least one transceiver, the method comprising:

monitoring one or more conditions in the communications network;

selecting one of a plurality of sleep modes based on the monitoring, each sleep mode of being associated with a different powering down procedure and a sleep duration; and

powering down the at least one transceiver for the sleep duration and in accordance with the powering down procedure associated with the selected sleep mode,

where the plurality of sleep modes includes at least four sleep modes,

where in response to selecting a first sleep mode of the at least four sleep modes, the powering down includes:

setting a sleep timer to a first period of time,

buffering outgoing packets, and

powering down the at least one transceiver for the first period of time, and

where in response to selecting a second sleep mode of the at least four sleep modes, the powering down the at least one transceiver for the sleep duration includes:

transmitting a link-level broadcast to one or more neighboring nodes,

setting the sleep timer to a second period of time, the second period of time being longer than the first period of time,

buffering outgoing packets, and

powering down the at least one transceiver for the second period of time.

30. (previously presented) The computer-readable memory device of claim 29 where in response to selecting a third sleep mode of the at least four sleep modes, the powering down the at least one transceiver for the sleep duration includes:

transmitting a point-to-point message to each of the one or more neighboring nodes, the point-to-point message causing each of the one or more neighboring nodes to transmit an acknowledgment message,

setting the sleep timer to a third period of time in response to receiving the acknowledgement message from each of the one or more neighboring nodes, the third period of time being longer than the second period of time,

buffering outgoing packets, and

powering down the at least one transceiver for the third period of time.

31. (previously presented) The computer-readable memory device of claim 30 where in response to selecting a fourth sleep mode of the at least four sleep modes, the powering down the at least one transceiver for the sleep duration includes:

transmitting a routing application message to each of the one or more neighboring nodes, the routing application message causing each of the one or more neighboring nodes to transmit a second acknowledgment message and remove the node from at least one routing table associated with the neighboring node,

setting the sleep timer to a fourth period of time in response to receiving the second acknowledgement message from each of the one or more neighboring nodes, the fourth period of time being longer than the third period of time,

buffering outgoing packets, and

powering down the at least one transceiver for the fourth period of time.

32. (canceled)

33. (original) A method for conserving power in a communications node that includes at least one transceiver, comprising:

selecting a sleep mode from a group that includes at least four sleep modes, a first sleep mode of the group including powering down the at least one transceiver without notifying neighboring nodes, a second sleep mode of the group including powering down the at least one transceiver after transmitting a link-level broadcast to neighboring nodes, a third sleep mode of the group including powering down the at least one transceiver after transmitting a point-to-point message to each neighboring node and receiving a first acknowledgement message from each

neighboring node, and a fourth sleep mode of the group including powering down the at least one transceiver after transmitting a routing application message to each neighboring node that causes each neighboring node to remove the communications node from its routing tables and receiving a second acknowledgement message from each neighboring node; and

powering down the at least one transceiver in accordance with the selected sleep mode.